DETERMINANTS OF FINANCIAL SUSTAINABILITY OF WATER COMPANIES IN NASARAWA STATE

BY

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DECLARATION

I hereby declared that this project has been written by me and it is a report of my research work. It has not been presented in any previous application for Postgraduate Programme. All quotations are indicated and sources of information specifically acknowledged by means of reference.

_____ _____

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CERTIFICATION

This project titled "**Determinants of Financial Sustainability of Water Companies in Nasarawa State**" meet the requirement governing the award of Masters in Business Administration of the School of Postgraduate Studies of Nasarawa State University, Keffi for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to my late father Alhaji Garba Mohammed and to my future children and husband.

ACKNOWLEDGMENT

My immense gratitude goes to Allah (SWT) the untouchable, the master of knowledge that gave me strength, inspiration and wisdom to accomplish this task. My salutation also goes to the most honourable messenger of Allah (SWA) Muhammed (S.A.W) upon his household, companion and upon those who remain loyal on the right path till the day of judgment. I will also like to thank Alhaji Muhammed Sale , Hussaini, Gabriel, Yakubu, Hadi and the entire members of my class for their support. And not forgetting my brother Nasiru Garba Mohammed and my sister Karimatu Garba Mohammed for their moral support. Same goes to my friends Wasila Hamidu, Musaiba Idris, Ummah Zubairu. I appreciate the entire members of Late Mal. Garba Muhammed's family for their prayers and best wishes.

ABSTRACT

The unique potential of water companies to reduce poverty and sustain itself can easily be lost if they are not committed to continue extending services to the low-income households on a long term basis. The objective of this study was to investigate the factors influencing financial sustainability of water companies operating in Nasarawa State. Descriptive case study design was adopted to answer the research problem which is to investigate the factors that determine financial sustainability in water companies. Data on the financial and operational performance of the firms was obtained from the Nigeria National Audit office, financial statements and Water Services Regulatory Board, sector evaluation report by Water services Regulatory Board. The target population of this study was the water companies in Nasarawa State, Nigeria. The study found that water companies in Nigeria though faces challenges, have enjoyed sustainable Operationalization of business. Most water companies are cushioned against financial losses being trustees and NGO funded. To ensure financial sustainability water companies in Nigeria have been providing differentiated access to finances which ensures that they are able to meet their customer expectations. The water companies' financial sustainability has been ensured by beefing up their service delivery and reducing credit risks at the same time as well as obtaining finances from both local and international donors. The study finally concludes that water companies' financial sustainability is influenced positively by total operating income, net loan portfolio and funds from government and donor agencies increases the water companies' sustainability and negatively by debt equity ratio, total operating expenses and average loan size. The study recommends that water companies should solicit for more funds from donors, increase the range of services they provide and beef-up their governance structure since financial sustainability is achieved when service and infrastructure levels and standards are delivered according to a long term plan.

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CHAPTER I

INTRODUCTION

1.1 BACKGROUND

Effective financial sustainability has been identified to be critical to all economic transactions especially in emerging and transition economies (Accord, 2004). However, at varying levels of agency interactions, market institutional conditions that reduce informational imperfections and facilitate effective monitoring of agents impinge on the efficiency of investment. Likewise, financial sustainability has assumed the centre stage for enhanced corporate performance. What then is financial sustainability?

Financial sustainability could be defined as "ways of bringing the interests of investors and managers into line and ensuring that firms are run for the benefit of investors (Mayer, 1997). Financial sustainability is concerned with the relationship between the internal governance mechanisms of corporations and society's conception of the scope of corporate accountability (Deakin and Hughes, 1997). It has also been defined by Keasey*et al.* (1997) to include 'the structures, processes, cultures and systems that engender the successful operation of organizations' . From the foregoing analysis, we argue that financial sustainability is represented by the structures and processes lay down by a corporate entity to minimize the extent of agency problems as a result of separation between ownership and control. It must also be indicated that different systems of financial sustainability will embody what are considered to be legitimate lines of accountability by defining the nature of the relationship between the company and key corporate constituencies.

The East Asian crisis and the recent corporate scandals around the world coupled with the seemingly poor performance of corporate Africa have given prominence and impetus to financial sustainability on the continent. The extant literature on financial sustainability, which is

generally about large and listed firms in the US and UK, considers the relationship between corporate ownership structure, boards of directors composition and corporate performance. One of the few comprehensive studies done on the continent with regards to financial sustainability was by Ayogu (2001). That study concentrated on regulations, legalities and governance practices across selected African countries. Again, Akinboade and Okeahalam (2003) followed up on the study by Ayogu (2001) by doing a cross-country study on selected African countries.

The study by Akinboade and Okeahalam was essentially a review of financial sustainability in Africa and highlighted issues and challenges. In addition to these, there are isolated country case studies. Sanda*et al.* (2005) looked at financial sustainability and financial performance of firms in Nigeria. Furthermore, Kyereboah-Coleman *et al*. (2006) conducted a study on financial sustainability and performance of listed firms in Ghana whiles Kyereboah-Coleman and Biekpe (2006) did a comparative study by looking at financial sustainability and performance of listed and non-listed banks in Ghana. Thus, the point must be made that linking financial sustainability and firm performance in a cross-country dimension for the African continent has never been attempted and this is our primary motivation for carrying out this study. On the African continent, financial sustainability matters are driven by countries' Companies Codes, Securities and Exchange Commissions, the stock exchange listing requirements, regulations and rules and other country-specific regulatory agencies. However, though financial sustainability in Africa is off on a good start, insufficient empirical research limit the basis for comparison of the continent's financial sustainability experiences and outcomes with other continents.

1.1.1 MEASURES OF FINANCIAL SUSTAINABILITY

Financial sustainability is a key issue for organizations in the twenty-first century as they increasingly acknowledge that their policies and practices have social and/or environmental

consequences (Christensen et al 2007), accordingly, many companies are implementing elements of financial sustainability into their business practices. Financial sustainability is achieved when service and infrastructure levels and standards are delivered according to a long term plan without the need to increase rates or reduce services. Long term financial sustainability is important if an organization is to deliver the services and programmes expected by the community. (Rusinko, 2005).

Responsible long term financial management means that an organization remains in a healthy financial position, Give financial outcomes greater stability and certainty and also gives the organization a fair degree of stability and predictability when it comes to current and future rates. (Hawken, 2003).

The measures of financial sustainability allow an organization to assess its financial performance and sustainability, as well as compare its performance against those of others. Seven key financial sustainability measures against which performance can be measured have been identified (Christensen et al 2007), operating surplus / (deficit) which measures the extent to which operating revenue is or is not sufficient to meet all of the costs of providing organizations goods and services, operating surplus ratio which expresses the operating surplus / (deficit) as a percentage of general and other rates, net of rebates, asset sustainability ratio which expresses net capital expenditure on renewal and replacement of existing assets as a percentage of the optimal level for such expenditure as shown in an organization's infrastructure and asset management plan, net financial liabilities which is a financial position measure and equals total liabilities less financial assets and net financial liabilities ratio which expresses net financial liabilities as a percentage of total operating revenue.

In the context of this report, sustainability is best defined pragmatically as 'whether or not something continues to work over time' (Abrams, 1998). More specifically for this research, it implies the ability to recover from technical breakdown in the scheme. Built into common conceptions of the term are notions of minimal external support, village-level financing and the continuation of a beneficial service over time (Parry-Jones et al, 2001). It is estimated that 35% of all rural water supplies in sub-Saharan Africa are not functioning (Baumann, 2005), and despite the frequency with which it appears in development discourse, the reality of sustainability remains elusive.

1.2 STATEMENT OF THE PROBLEM

The unique potential of water companies to reduce poverty and sustain itself can easily be lost if they are not committed to continue extending services to the low-income households on a long term basis. Worse still, temporary micro-finance programs can disrupt the financial systems in an economy and the lives of their beneficiaries with disastrous effects.

Chua (1998) observed that a significance number of the water companies service providers are struggling with sustaining their institutions despite emergence of models that have shown increasing success in terms of their ability to reach the poor and in sustaining the delivery of financial services. Mohammed (2008) observed that most water companies in Africa remain heavily dependent on external financial assistance from donors. The general decrease in donor funding and the emphasis by donors to fund project-based activities and avoid organization's overheads portrays much threat to financial sustainability of donor funded water companies.

Locally Oriaro (2001) carried an assessment on the suitability of a regulatory framework for operations of water companies in Nigeria. Magiri (2002) investigated relationships between

credit models used by water companies in Nigeria and the attainment of outreach. Ogindo (2006) carried on an assessment of performance of water companies in Nigeria. Wanjohi (2008) investigated competitive strategies and positioning within a changing business environment adopted by water companies in Nigeria. Despite the many studies on water companies, most of the researchers have focused on the sources of finances for water companies and other issues affecting their operation. This study sought to bridge the research gap by investigating factors influencing financial sustainability of water companies in Nigeria hence answering the question what are factors influencing financial sustainability of water companies operating in Kebbi?

1.3 OBJECTIVES OF THE STUDY

The objective of this study was to investigate the factors influencing financial sustainability of water companies operating in Nasarawa State.

1.4 VALUE OF THE STUDY

The study is of value to the following group of individuals;

i) The water companies practitioners as they design institutional models which facilitate better management practices and clear ownership structure hence enhancing sustainability of the institutions.

ii) The government and other policy makers to identify whether their input directly or indirectly affects water companies long term goal of being financially sustainable.

iii) Donors and other investors on how best they can help water companies grow towards financial sustainability.

CHAPTER II

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents the study objectives against the background of other knowledge from other scholars and researchers. It comprises of theoretical review, empirical review, and conceptual framework, critique of the review and research gaps.

2.2 THEORIES OF FINANCIAL SUSTAINABILITY

2.2.1 AGENCY THEORY

Agency theory has been used to examine an agency relationship (Greenwood, 2003). Jensen and Meckling define an agency relationship as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some on their behalf which involves delegating some decision making authority to the agent" (Jensen & Meckling, 1976). Despite the fact that many different theories and approaches are used to explain executive management, the perfect contracting approach of agency theory, as introduced by Jensen and Meckling (1976), still dominates the field. It argues that the separation of ownership and control in a large organisation creates a power base for executive management (Green 2008).

Often, an agency relationship will pose the agency problem which results from the goal conflict between the principal and the agent (Saam, 2007). Contracts used to solve the agency problem include behaviour-based contracts and outcome-based contracts (Greenwood, 2003; Johnson & Droege, 2004). Under a behaviour-based contract, the principal will directly monitor, assess, and reward the agent on the basis of information about the agent's actual behaviour (Dalton, Hitt, Certo & Dalton**,** 2007). Employing either the behaviour-based contract or the outcome-based contract will depend on comparing the cost of measuring behaviour and the cost of measuring outcomes and transferring risk to the agent (Heide, Wathne & Rokkan**,** 2007). This study dwells

on the outcome-based contracts or the incentive-based contract (Greenwood, 2003; Johnson &Droege, 2004. This is due to the critical functions of the of the financial managers which are capital budgeting, risk management, financial analysis, working capital management, derivatives, asset pricing, investment banking, M&A and other corporate restructuring (David, Bloom & Hillman, 2007)**.** Logically, the agent will put the full effort to gain a high level of outcome since the remuneration paid to the agent will depend on the actual outcome. It is worth noting that under this contract the principal will not monitor and assess the agent (this is different from the behaviour - based contract), but he/she will pay attention only to performance outcome. The principal needs to design the outcome-measuring systems.

Although the actions of all the parties are united by one mutual objective of wishing the firm to survive, the various principals involved might make various arrangements to ensure their agents work closer to their own interests. Some principals may have sustainability interests (e.g., concern for the environment) that run counter to managerial interests (Aras &Crowther, 2008). Other principals may have only short-term interests, so managers must be aware of the potential for principal opportunism as well. Agency theory highlights the importance of structuring incentives so that managers are responsive to these long-term interests of principals, and it also highlights the responsibility of boards for ensuring that managers make decisions that provide sustainable value (David et al. 2007). Consequently, the focus of the agency theory is to design the optimal contract for resolving the agency problem (Bushee 2001), or aligning the goals between principals and agents (Johnson &Droege, 2004). At the same time, agency theory research has also revealed principals who have interests that conflict with other stakeholders and do not foster sustainable practice. Some investors move quickly in and out of investments and are so sensitive to current earnings that they are not interested in the long-term prospects of firms in their portfolio (Bushee 2001). These principals also have the ability to influence decision-

makers and are likely to move them away from strategic competitive actions that are often associated with sustainability (Connelly et al. 2010).

When managers are faced with competing interests of principals their allegiance is divided and their ability to implement sustainability initiatives that may be unpopular with some investors is limited (Hoskisson, Hitt, & Grossman, 2002). Some have suggested that such short-term investors are the worst kind of principals because they are themselves opportunistic, which may come at the expense of sustainable practices (Christensen & Anthony, 2007). Recent research on the conflicting interests of principals (Arthurs, Hoskisson, Busenitz& Johnson, 2008) may indicate that managers' real responsibility should be to act in the interest of those whose interests coincide with the firm's long-term prospects. Toward this end, managers make their commitment to sustainability explicit in their mission statements in their organizations.

Some theorists, researchers, and observers contend that evolution in the contemporary financial environment have created conflicts between stakeholders and their agents, wherein shareholder interests are no longer always accorded preference (Hoskisson et al., 2002). Others, however, contend that economic agency is an efficient form of organization, because a corporation has no "owners in a meaningful sense" (Ambec & Lanoie, 2008). The correct view likely lies at some point between these two views. One power that shareholders possess is the right to remove the directors from office. Managers might do their best to improve the financial performance of their company because their pay is often related to the size or profitability of the company.

However, Brecht et al. (2002) have recently challenged this theory by arguing that some of the incentive systems that are in common use and that were originally set up to reduce agency problem do not align principals and agents, due to the incorrect assumption that earnings and stock prices cannot be manipulated. Frey (2003) argues that it builds primarily or exclusively on

extrinsic motivation. Problems of agency are central in the corporate governance literature, and financial management is a critical part of corporate governance.

2.2.2 RESOURCE BASED VIEW

The currently dominant view of business strategy resource-based theory or resource-based view (RBV) of firms is based on the concept of economic rent and the view of the company as a collection of capabilities. This view of strategy has a coherence and integrative role that places it well ahead of other mechanisms of strategic decision making (Kay, 2005). The resource-based view (RBV) offers critical and fundamental insights into why firms with valuable, rare, inimitable, and well organized resources may enjoy superior performance (Barney, 1995).

The main contribution of the resource-based view lies in the notion of competitive advantage. The resource-based view of the firm, which envisions firms as a bundle of resources, is probably the dominant theory for explaining differences in performance among firms today (Barney and Arikan, 2001). “Resou rces” have been variously defined by RBV theorists, but can include financial capital, assets, human skills/knowledge, organizational processes, and technologies (Carmeli, 2001). Despite the varied positioning of early resource-based contributions, each focused on the distinctive resource profiles of heterogeneous firms and the question of why some firms consistently outperform others. A portion of the most important of the research to shape resource-based thought is rooted in the early research on distinctive competencies, Ricardian economics, and the theory of firm growth proposed by Penrose (1959), since concepts from that historical research influenced the fundamental assumptions of the model (Barney, 2002).

The resource-based view suggests that a firm can create sustainable competitive advantage through developing its unique resources and capability (Barney, 2001). The difference between providing short-term competitive advantage and that which is sustainable resides in the notion that these resources are heterogeneous in nature and not perfectly mobile (Barney 2002).

Managers are not static in the RBV, but instead they are called upon to structure, bundle, and leverage their valuable resources in unique ways to maximize their contribution to providing sustained advantage (Sirmon et al. 2007).

The RBV shares some common terms with sustainability research, such as "resources" and "sustainable," making its application somewhat intuitive. This thesis is concerned with sustainability as "meeting the organization's present needs without compromising the ability of future generations to meet their own needs," rather than the sustainability of competitive advantage. However, the two are not unrelated. The RBV suggests that competitive advantage may be sustained when the firm's resources are inimitable and non-substitutable (Barney 1991). This points to the importance of ensuring that a firm's inimitable and non-substitutable resources are nurtured, maintained, and renewed over time. Researchers might also use the RBV to highlight the notion that sustainability initiatives may be useful to firms insofar as they can provide competitive advantage (Rechenthin, 2004). From an RBV perspective, sustainability initiatives that reside at the intersection of social/environmental concerns and market opportunities may stand the greatest chance of success. The resource based view, which is used as a theoretical foundation for human resource management, is based on the assumptions that firm resource distributed heterogeneously and remained stable over time (Morris, Snell and Wright, 2005). In Barney's view, the resources of a firm include both tangible and intangible assets, for instance, machines, management skills, organizational processes and routines, and information and knowledge (Barney, 2001).

Literature on the resource-based view already provides resources which contribute to the formulation of sustainability-related strategies, such as continuous improvement (Christmann, 2000), a shared vision within the church based organizations, high order-learning, relationships with external stakeholders (Katsoulakos and Katsoulacos, 2007), stakeholder involvement

(Sharma and Vredenburg, 2003), green supply chain management practices (Rao and Holt, 2005), international experience, working capital management skills, organizational slack (Bansal, 2005), and political management capabilities (Oliver and Holzinger, 2008). However, this literature emphasizes how these resources affect an organization's environmental or social performance and ultimately its financial performance. According to the resource based view, firms should look into their internal resources, both physical and intellectual, for sources of competitive advantage (Allen and Wright, 2008).

Building on the RBV, Hoopes, Madsen and Walker (2003) suggest a more expansive discussion of sustained differences among firms and develop a broad theory of competitive heterogeneity. The RBV seems to assume what it seeks to explain. This dilutes its explanatory power. For example, one might argue that the RBV defines, rather than hypothesizes, that sustained performance differences are the result of variation in resources and capabilities across firms. The difference is subtle, but it frustrates understanding the Resource Based View's possible contributions (Hoopes et al., 2003). The Resource Based View's lack of clarity regarding its core premise and its lack of any clear boundary impedes fruitful debate. Given the theory's lack of specificity, one can invoke the definition-based or hypothesis-based logic any time. Again, we argue that resources are but one potential source of competitive heterogeneity. Competitive heterogeneity can obtain for reasons other than sticky resources (or capabilities) (Hoopes et al. 2003). Competitive heterogeneity refers to enduring and systematic performance differences among close competitors.

The RBV uses firms' internal characteristics to explain firms' heterogeneity in strategy and performance. A firm is an organized, unique set of factors known as resources and capabilities, and RBV theory cites two related sources of advantages: resources and capabilities. Resources are a firm's accumulated assets, including anything the firm can use to create, produce, and/or

offer its products to a market. Resources are eligible for legal protection (as such, firms can exercise property rights over them; Amit and Schoemaker, 1993); can operate independently of firm members (Camisón, 2005); and intervene as factors in the production process to convert input into output that satisfies needs (Grant, 1991).

Another theory is the Resource Dependence Theory which is based upon how the external resource of organizations affects the behavior of the organization. The theory is based upon the following tenets: Organizations are dependent on resources, these resources ultimately originate from the environment of organizations, the environment to a considerable extent contains other organizations, the resources one organization needs are thus often in the hand of other organizations, resources are a basis of power, legally independent organizations can therefore be dependent on each other (Pfeffer and Salancik 1978). In as much as organizations are inter-dependent, the theory of Resource Dependence needs a closer examination. Its very weakness lies in its very assertions of dependence. With changing trends of financial uncertainties, there is need to lean towards other theories of uncertainties. Thus this links us to another theory, namely the theory of complexity. Complexity theory, which is the study of nonlinear dynamic systems promises to be a useful conceptual framework that reconciles the essential unpredictability of industries with the emergence of distinctive patterns. Despite the fact that the theory was originally developed in the context of physical and biological sciences, today it has found applications in social, ecological and economic systems which also tend to be characterized by nonlinear relationships and complex interactions that evolve dynamically over time (Kiel and Elliott, 1996).

During the 1990s, there was an explosion of interest in complexity as it relates to organizations and strategy. The theory suggests that simple deterministic functions can give rise to highly complex and often unpredictable behavior. Thus, applying this theory in strategic planning

presupposes flexibility on the part of an organization. Any strategic planning should be done in such a manner that it accommodates the “unexpected”. Thus organizations would not only depend on others but devices alternative strategies to counter the unexpected.

2.2.3 THE STAKEHOLDER THEORY

In the mid-1980 a stakeholder approach to strategy came up. One focal point in this movement was the publication of Richard Edward Freeman (1984). He is generally credited with popularizing the stakeholder concept. In defining 'Stakeholder Theory' Clarkson (1994) states: '"The firm" is a system of stake holders operating within the larger system of the host society that provides the necessary legal and market infrastructure for the firm's activities. Friedman and Miles (2006) states that the organization itself should be thought of as a grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. This stakeholder management is thought to be fulfilled by the managers of a firm. This view is supported by Phillips (2003) who proposes that the goal of directors and management should be maximizing total wealth creation by the firm. Stakeholder theory has its origins in management literature. Stakeholder theory suggests that the purpose of a business is to create as much value as possible for stakeholders. In order to succeed and be sustainable over time, executives must keep the interests of customers, suppliers, employees, communities and shareholders aligned and going in the same direction.

The stakeholder theory with its firm-centric focus (in effect a focus on a particular set of people) over others faces difficulties. Particularly as it is a theory that is not for the whole of humanity, rather from its inception it has been a theory designed to help the firm and thus managers consider the external separate environment and the opportunities and threats therein, in order that the firm can prosper (Orts and Strudler, 2002). An early connection between stakeholder

theory and sustainable development may be found in Clarke & Clegg's (1998) book "Changing Paradigms: T he Transformation of Management Knowledge for the 21st Century".

Following the categorization of stakeholder theory by Donaldson and Preston (1995), the central premise in project stakeholder management is primarily utilitarian in its nature and built largely on instrumental premises. Not until recently have the ethics based approaches appeared (Mathur et al., 2008; Moodley et al., 2008; Smyth, 2008). On the whole, the mainstream approach in project stakeholder management is to effectively manage stakeholders in alignment with project interests, meeting profit through project objectives, while achieving a net increase in societal welfare or regarding ethical validity of stakeholders' claims are dismissed (Smyth, 2008) . Similarly, Mathur et al. (2008) highlight the evolving discourses on stakeholder engagement, sustainability and its assessment; they note that existing practices view stakeholder engagement mainly from a management's perspective and less often from an ethical perspective.

A number of authors have also investigated the stakeholder theory in quality management and some of these papers represent an effort to also promote sustainability from the quality framework (Garvare & Isaksson (2001), Isaksson & Garvare (2003), Foster & Jonker (2003), Edgeman & Hensler (2005), Foster (2005), Garvare et al. (2006), Johansson (2006) and Garvare& Johansson (2007)). Above all, however, there is a recurrent emphasis in analysis of "stakeholder invo lvement" (Proenza 2001; Roman and Colle 2002; Caspary and O'Connor 2003; Cecchini and Raina 2004; Colle 2005). Roman and Colle (2002, 12) call for a "conscientious atte ntion to participation" because it "conveys a sense of ownership; it provides indigeno us wisdom; it helps reflect societal values and needs; it provides important resources, such as volunteers or technical expertise." Kanungo (2004) states that collective o wnership implies access to everyone regardless of their social status. The management of external stakeholders has received only little attention. However, due to the rising ethics and

sustainability issues, the strategic importance of external project stakeholder management will increase in the near future.

2.2.4 PORTFOLIO THEORY

Portfolio theory was first discovered and developed by Harry Markowitz in the 1950's. His work forms the foundation of modern Finance. The resulting theory as modified and extended by many researchers is often called modern portfolio theory. Modern portfolio theory (MPT) is a theory of finance which attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets (Bhalla, 2010). Portfolio theory is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than any individual asset. While investigating the relationship between income diversification and financial sustainability for nonprofits, the modern portfolio theory suggests that more diversification reduces volatility at the expense of reduced expected income. Income diversification is embedded in the portfolio theory (Kingma, 2003).

In portfolio theory, it is often assumed for the sake of simplicity that returns are normally distributed over the time period under analysis (Greenlee and Tuckman, 2007). With this assumption, portfolio efficiency is determined by simply compounded expected returns and the standard deviations of the simply compounded returns (Norstad, 2005). Income diversification has become a prevalent practice in firm finance. The trend of income diversification, according to the portfolio theory, has far-reaching implication for public financial management as it may change the financial sustainability, which has been an important policy objective for organization administrators (Trussel, 2002).

2.3 EMPIRICAL REVIEW

There is evidence to support both characterizations of the relationship. Morck, Schleifer, and Vishney (1988), McConnell and Servaes (1988), and Core and Larcker (2002), for example, find that governance structure affects firm value. In contrast, Demsetz and Lehn (1985) and Agrawal and Knoeber (1996) present evidence that suggests owners and managers select a variety of different governance structures, each of which may be value maximizing, but none of which are related to corporate performance.

Several difficulties arise in examining the financial sustainability-performance relationship empirically that may contribute to the divergence in the evidence. One is that governance and performance are likely to be jointly determined. For example, a governance mechanism like the ownership stake held by board members may lower agency costs by pumping up the rewards to effective monitoring. This may lead to better firm performance, but better firm performance may also lead board members to hold larger stakes of the firm, creating two-way causality between governance and performance. Many studies that examine performance and governance structure use a single regression equation framework, failing to account for the potential dual causality between performance and governance structure. Jensen, Solberg, and Zorn (1992), Barnhart and Rosenstein (1998), and Weber and Dudney (2003) tackle this problem by utilizing a simultaneous equations framework that allows firm performance and governance structure to be endogenous.

Another challenge for researchers is that financial sustainability is multifaceted. Owners and managers select an array of governance variables in managing the agency problem to create an overall governance posture or governance regime. What matters for controlling agency costs in the regime isn't the level of any given variable, but the effectiveness of the overall regime.

Gompers, Ishii, and Metrick (GIM, 2003) offer a clever approach to this problem. They create a financial sustainability index – the G-Ind ex – that summarizes an array of variables comprising a firm's overall governance regime. Other researchers are increasingly adopting this approach. Chi (2005), Cremers and Nair (2005), Jiraporn, Kim, Davidson, and Singh (2006), and Core, Guay, and Rusticus (2006) use the G-Index to in empirical studies. Interestingly, the market has also picked up this idea. According to *CFO Magazine*, in 2002 at least five separate private enterprises were offering or preparing to offer comprehensive external evaluations of financial sustainability for individual companies. Much like bond ratings agencies, these governance-raters attempt to convert a complex array of financial sustainability characteristics into a single, comprehensive, and comparable metric that describes a firm's governance regime.

Private governance ratings not only offer owners and managers an external evaluation of their governance regime, they also offer researchers a compelling alternative to constructing their own indexes to examine the relation between governance and firm performance. In a different study, there is exploiting of the opportunity presented by private governance ratings to examine the relationship between a financial sustainability and firm performance. The index selected is the Financial sustainability Quotient (FSQ) developed and published by Institutional Shareholder Services (ISS). Unlike the G-Index, FSQ is commercially produced and widely available to investors and managers. The study offers several useful extensions of the existing literature. The study is the first academic study of which we are aware to investigate the relationship between any other commercially-produced governance rating or index and firm performance. The study also ties together for the first time two important, but previously unconnected, strands of the extant literature. The indices used represent financial sustainability regimes, and simultaneous equations model to explicitly account for joint determination of the governance regime and firm performance was used.

2.3.1 ORGANIZATIONAL PERFORMANCE MEASURES

The literature employs a number of different measures of firm performance to test agency cost hypotheses. These measures include 1) financial ratios from balance sheet and income statements (e.g., Demsetz and Lehn 1985, Gorton and Rosen 1995, Mehran 1995, Ang, Cole, and Lin 2000), 2) stock market returns and their volatility (e.g., Saunders, Strock, and Travlos 1990, Cole and Mehran 1998), and 3) Tobin's q, which mixes market values with accounting values (e.g., Morck, Shleifer, and Vishny 1988, McConnell and Servaes 1990, 1995, Mehran 1995, Himmelberg, Hubbard, and Palia 1999, Zhou 2001).

Frontier efficiency computed using a profit function – is a more appropriate measure to test agency cost theory because it controls for the effects of local market prices and other exogenous factors and because it provides a reasonable benchmark for each individual firm's performance if agency costs were minimized.4 Profit efficiency is superior to cost efficiency for evaluating the performance of managers, since it accounts for how well managers raise revenues as well as control costs and is closer to the concept of value maximization. Although maximizing accounting profits and maximizing shareholder value are not identical, it seems reasonable to assume that shareholder losses from agency costs are close to proportional to the losses of accounting profits that are measured by profit efficiency. We measure profit efficiency in two different ways, standard profit efficiency and alternative profit efficiency. The standard profit function takes variable output prices as given and allows output quantities to vary, so that it accounts for revenues that can be earned by varying outputs as well as inputs. Alternative profit efficiency is computed similarly, except that output quantities are taken as exogenous instead of output prices, so that the firm is modeled as choosing prices rather than quantities.

2.3.2 ACCESS TO FINANCING AND FINANCIAL SUSTAINABILITY

In a classic study, Rajan and Zingales (1998) show that financial development facilitates economic growth by reducing the cost of external financing, and that the industries that are more dependent on external financing grow disproportionately faster in a more financially developed market. Since then, numerous papers have argued that finance (more specifically financial development) does have real effects on economic growth. Demirguc-Kunt and Maksimovic (1998) investigate how differences in legal and financial systems affect firms' use of external financing to fund growth. They show that in countries whose legal systems score high on an efficiency index, a greater proportion of firms use long-term external financing and that an active, though not necessarily large, stock market and a large banking sector are also associated with externally financed firm growth. In a separate note, Huang and Kracaw (1984) also show that aggregate stock market volatility Granger causes various macroeconomic instruments, such as aggregate national output and unemployment. These studies clearly delineate the link between finance and the real economy at the aggregate level, but our understanding of the real effects of financial structure at a more disaggregate level is limited. Chittenden et al. (1996) analyze a sample of listed and unlisted small firms and find that profitability, asset structure, size (total assets), age, and access to the capital market is related to the financial structure of a small firm. They show that financial structure is significantly related to the growth of a small firm only when the firm is experiencing a rapid growth combined with a lack of access to the external capital market.

A separate strand of the literature addresses the determinants of firm growth without any reference to the firm's financial structure and its access to external financing. Hart and Paris (1956) in a classic empirical study of British companies find that growth is roughly independent of a firm's size suggesting evidence of the celebrated Gibrat's Law which states that the current growth rate of a firm is independent of its current size and past growth. This has led to the

development of various industrial economics theories that take the Gibrat's Law as a desirable implication. Many studies do find that Gibrat's Law holds, but most of the studies use large firms in their sample construction. Many other studies find a negative relationship between a firm's size and growth, but the departure from the Gibrat's Law decreases as the firm's size increases. Jovanovic (1982) argues in a theoretical model that in a general form, a firm's growth decreases with age when size is held constant. Nelson and Winter (1982) propose an evolutionary theory of the firm to capture the dynamics of Schumpeter's (1934) creative destruction process into the birth, growth and death dynamics of a firm in a competitive environment. They argue that 'organizational routines' are an economic analogue of the gene in biology.

Routines, as 'organizational memory' of the firm, c arry forward the learning through stochastic processes to the future management just like the human gene carries through generation the attributes of human personalities. Evolutionary theories of the firm put more emphasis on the process of learning and development within an organization, and see the economic agents as explorers and creators rather than strict profit maximizers. Hopenhayn (1992) allows firm heterogeneity to be driven by underlying productivity differences. Cooley and Quadrini (2001) extend Hopenhayn (1992) by incorporating the effects of financial frictions, so that productivity and internal equity provide the two underlying sources of firm heterogeneity.

2.3.4 COST OF CAPITAL AND FINANCIAL SUSTAINABILITY

Agency costs represent important problems in financial sustainability in both financial and nonfinancial industries. The separation of ownership and control in a professionally managed firm may result in managers exerting insufficient work effort, indulging in perquisites, choosing inputs or outputs that suit their own preferences, or otherwise failing to maximize firm value. In

effect, the agency costs of outside ownership equal the lost value from professional managers maximizing their own utility, rather than the value of the firm.

Theory suggests that the choice of capital structure may help mitigate these agency costs. Under the *agency costs hypothesis*, high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value by constraining or encouraging managers to act more in the interests of shareholders. Since the seminal paper by Jensen and Meckling (1976), a vast literature on such agency-theoretic explanations of capital structure has developed (Harris and Raviv 1991 and Myers 2001 for reviews). Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, perquisites, etc. (Grossman and Hart 1982, Williams 1987), and through pressure to generate cash flow to pay interest expenses (Jensen 1986). Higher leverage can mitigate conflicts between shareholders and managers concerning the choice of investment (Myers 1977), the amount of risk to undertake (Jensen and Meckling 1976, Williams 1987), the conditions under which the firm is liquidated (Harris and Raviv 1990), and dividend policy (Stulz 1990).

A testable prediction of this class of models is that increasing the leverage ratio should result in lower agency costs of outside equity and improved firm performance, all else held equal. However, when leverage becomes relatively high, further increases generate significant agency costs of outside debt – includin g higher expected costs of bankruptcy or financial distress – arising from conflicts betw een bondholders and shareholders. Because it is difficult to distinguish empirically between the two sources of agency costs. Despite the importance of this theory, there is at best mixed empirical evidence in the extant literature (see Harris and Raviv 1991, Titman 2000, and Myers 2001 for reviews). Tests of the *agency costs hypothesis* typically

regress measures of firm performance on the equity capital ratio or other indicator of leverage plus some control variables.

2.3.5 RISK FINANCING PATTERN AND FINANCIAL SUSTAINABILITY

Weaknesses in corporate sector have been mentioned as "important" factors for either view. Corsetti et al. (1998) for example, mention weak corporate performance and risky financing patterns as important causal factors for the East Asian financial crisis. And Krugman (1999) draws attention to the "transfer pro blem" arising if the corporate sector has large foreign exchange liabilities, where small shocks can lead to a bad equilibrium. Krugman (1999) argues that company balance sheet problems may have a role in causing financial crises, independently of macro-economic or other weaknesses, including a poor performance of the corporate sector itself. In particular, a depreciation of the domestic currency causes an increase in the currency value of foreign-denominated firm debt, with firms also facing declining sales and higher interest rates. The resulting balance sheet problems and reversal of capital flows weaken the corporate sector, and in turn the financial system. This triggers further currency depreciation with a current account surplus to accommodate the capital reversal deficit and financial system weakness.

Krugman ascertains that the risks of such event occurring are higher when there is low profitability of firms relative to the cost of funds to financial institutions. Demirguc-Kunt and Maksimovic 1998, for example, find that the degree to which specific firms (or the corporate sector in general) use long-term external financing from either stock markets or banks, affects their growth. Stulz (1999) review these and other papers on the relationships between financial structures and corporate finance and economic growth. La Porta et al. (1999a) study agency problems and dividend policies around the world. La Porta et al. (1999c) looks at the expropriation of minority shareholders due to the separation of ownership and control. As noted, recent papers on the relationships between institutional factors and financial structures (La Porta

et al., 1999, Demirguc-Kunt and Levine, 1999, Rajan and Zingales, 1995 and 1998) highlight that institutional factors in a particular country are likely to greatly influence the performance and financing patterns of firms, including their risk-taking behavior.

2.3.6 THE CONFLATION OF FINANCIAL SUSTAINABILITY

One view of good financial sustainability is that of stewardship and thus, just as the management of an organization, is concerned with the stewardship of the financial resources of the organization, so too would management of the organization be concerned with the stewardship of environmental resources. The difference however is that environmental resources are mostly located externally to the organization. Stewardship in this context therefore is concerned with the resources of society as well as the resources of the organization. As far as stewardship of external environmental resources is concerned then the central tenet of such stewardship is that of ensuring financial sustainability. Financial sustainability is focused on the future and is concerned with ensuring that the choices of resource utilization in the future are not constrained by decisions taken in the present. This necessarily implies such concepts as generating and utilizing renewable resources, minimizing pollution and using new techniques of manufacture and distribution. It also implies the acceptance of any costs involved in the present as an investment for the future.

Not only does such financial sustainable activity however impact upon society in the future; it also impacts upon the organization itself in the future. Thus good environmental performance by an organization in the present is in reality an investment in the future of the organization itself (Waddock and Graves, 1997). This is achieved through the ensuring of supplies and production techniques which will enable the organization to operate in the future in a similar way to its operations in the present and so to undertake value creation activity in the future much as it does

in the present. Financial management also however is concerned with the management of the organization's resources in the present so that management will be possible in a value creation way in the future. Thus the internal management of the firm, from a financial perspective, and its external environmental management coincide in this common concern for management for the future. Good performance in the financial dimension leads to good future performance in the environmental dimension and vice versa. Thus there is no dichotomy (Crowther, 2002) between environmental performance and financial performance and the two concepts conflate into one concern. This concern is of course the management of the future as far as the firm is concerned. The role of social and environmental accounting and reporting and the role of financial accounting and reporting therefore can be seen to be coincidental. Thus the work required needs be concerned not with arguments about resource distribution but rather with the development of measures which truly reflect the activities of the organization upon its environment. These techniques of measurement, and consequently of reporting, are a necessary precursor to the concern with the management for the future – and hence with sustaina bility.

Similarly the creation of value within the firm is followed by the distribution of value to the stakeholders of that firm, whether these stakeholders are shareholders or others. Value however must be taken in its widest definition to include more than economic value as it is possible that economic value can be created at the expense of other constituent components of welfare such as spiritual or emotional welfare. This creation of value by the firm adds to welfare for society at large, although this welfare is targeted at particular members of society rather than treating all as equals. This has led to arguments by Herremans *et al.* (1992), amongst others, concerning the distribution of value created and to whether value is created for one set of stakeholders at the expense of others. Nevertheless if, when summed, value is created then this adds to welfare for society at large, however distributed. Similarly good environmental performance leads to

increased welfare for society at large, although this will tend to be expressed in emotional and community terms rather than being capable of being expressed in quantitative terms. This will be expressed in a feeling of wellbeing, which will of course lead to increased motivation. Such increased motivation will inevitably lead to increased productivity, some of which will benefit the organizations, and also a desire to maintain the pleasant environment which will in turn lead to a further enhanced environment, a further increase in welfare and the reduction of destructive.

2.4 CONCLUSION

In conclusion, financial sustainability of institutions is probably the key dimension of water companies. It refers to the ability of water company to cover all its costs from its own generated income from operations (Thapa *et al*., 1992) without depending on external support or subsidy. Dunford (2003) also defines financial sustainability as the ability to keep on going towards the company's objective without continued donor support. These definitions center on one point, that is, the ability to depend on self-operation. The definitions also imply the possibility of making profit out of the company operations. Financial sustainability can be measured in two stages namely operational sustainability and financial self-sufficiency. According to Meyer (2002) operational sustainability refers to the ability of the company to cover its operational costs from its operating income regardless of whether it is subsidized or not. On the other hand, companies are financially self- sufficient when they are able to cover from their own generated income, both operating and financing costs and other form of subsidy valued at market prices.

CHAPTER III

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the methodology which was adopted and used in this study. It describes the study design, population area of study, sample design, data collection, procedure, (instruments) and data analysis method.

3.2 RESEARCH DESIGN

For this study, descriptive case study design was adopted to answer the research problem which is to investigate the factors that determine financial sustainability in water companies. Data on the financial performance of the firms was obtained from Audited Finnacial Statements by Nigeria National Audit Office. Data on the opetaional performance of the water companies was Obtained from Water services Regulatory Board Evaluation report, Published in form of Sector Impact Report. This design is ideal for collecting descriptive information on the preference of procurement method besides describing the characteristics of the variables of interest in a situation. Mugenda & Mugenda, (2003), defines research design as a conceptual structure within which research is conducted. Further, according to Sekaran, (2006), descriptive research design is suitable where the study sought to describe and portray characteristics of an event, situation, and a group of people, community or population which is the case to be adopted in this study.

3.3 POPULATION

The target population of this study was the water companies in Nasarawa State, Nigeria. There are four water companies which include: Kebbi water and Sewerage Company, Mathira water and Sewerage Company, Othaya Mukurweini water and Sewerage Company and Tetu Aberdare water and sewerage company. The target population is also referred to as the universe into which the study population is generalized. However, since it is a case study, the population of the study was the water companies in Nasarawa State. The County has four water companies that are being targeted by this study.

3.4 DATA COLLECTION

The study collected secondary data. The secondary data was gathered through a thorough review of both the empirical and theoretical literatures. The collected covered a period of five years i.e from 2008-2012. All this information was from company's Audited Financial Statements for the Five years. The audited Financial Statements were sourced from the companies Finance Department and were also available in the regional office of Nigeria National Audit Office as well as the regional Regulator i.e Tana Water Services Board.

3.5 DATA ANALYSIS AND PRESENTATION

The data collected was cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical Package for Social Sciences (SPSS). Quantitative analysis was analyzed through descriptive statistics such as measure of central tendency that generated relevant percentages, frequency counts, mode, and median and mean where possible. Inferentially, a correlation analysis was conducted to establish the correlation coefficients of each variable of interests. In order to make the data more user-friendly and attractive to the readers, graphic interactive tables were generated using the computer spreadsheet to present the data. The following regression model was used to establish the relationship between the variables.

The regression equation (**$Y = \beta 0 + \beta iXi + \beta iiXii + \beta iiiXiii + \beta ivXiv + e$**)

Whereby Y = Financial Sustainability

$\beta 0$ = Constant

Xi = Organizational Performance Measures

Xii = Access to Financing

Xiii = Cost of Capital

Xiv= Risk Financing Pattern

e = Error Term

CHAPTER IV

DATA FINDINGS AND ANALYSIS

4.1 INTRODUCTION

This study presents the data findings obtained by the study, its analysis and recommendations there-to. The data findings were aimed at gathering information on the determinants of financial sustainability of water companies in Nasarawa State. Out of the four water companies targeted by the study, data were collected on the all the four companies making a response rate of 100%. The commendable response rate was attained after the researcher made spirited efforts by making phone calls and making occasional visits to the water companies to get the data.

4.2 SUMMARY STATISTICS

4.2.1 RESULTS ON DETERMINANTS OF FINANCIAL SUSTAINABILITY OF WATER COMPANIES

4.2.1.1 Descriptive Statistics for the Model Variables

Table 1: Descriptive Statistics for the Model Variables

	Mean	Minimum	Maximum	Std. Deviation
Access to financing	0.337204	0.2231	0.4671	0.1013428
Cost of capital	17.576467	15.4249	18.4081	1.2324235
Risk financing pattern	8.589098	6.7093	9.4788	1.1176330
Organizational Performance Measures	18.454888	17.5044	18.9335	.5667863

The table above shows the mean score, minimum and maximum values and the standard deviations for the value of variables; both dependent and independent used found from the secondary sources. According to the table, Access to financing had a mean of 0.3372 with a standard deviation of 0.1013 between a maximum and a minimum value of 0.4671 and 0.2231 respectively. Since as Bogan, (2008) advanced, operational sustainability is defined as having an

access to financing level of 100% or more or more and the $e^{0.3372}$ = 1.401 is 140%, means that the financial institutions are financially sustainable.

4.2.2 MODEL SUMMARY

Table 2: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
0.783	0.613	0.480	0.0730487	0.610

Table 2 above presents the model summary. According to the table, the value of R is 0.783 which shows that there is a strong positive correlation between the observed and predicted values. The value of R-Squared is 0.613 revealing that 61.3% of the variations in the independent variables are explained by the regression model that is, the model fits the data well.

4.2.3 COEFFICIENT OF THE REGRESSION MODEL

Table 3: Coefficient of the Regression Model

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	-9.547	0.737	
Access to financing	0.781	0.023	-3.642
Cost of capital	0.828	0.025	-0.164
Risk financing pattern	0.860	0.059	4.629
Organizational Performance Measures	-0.380	0.180	0.781

Table 3 above shows the coefficient of the independent variables in the regression model:

$Y = \beta 0 + \beta iXi + \beta iiXii + \beta iiiXiii + \beta ivXiv + e.$

Where; Y is the Financial sustainability measured by operational self sufficiency (a profitability measure), βiXi is Access to financing, βiiXii is Cost of capital, βiiiXiii is Risk financing pattern, **βivXiv** and is Organizational Performance Measures.

According to the coefficients presented in the table, the regression model will thus appears as;

$$Y = -9.547 + 0.781\ \beta iXi + 0.828\ \beta iiXii + 0.860\ \beta iiiXiii - 0.380\ \beta ivXiv + e.$$

According to the regression model above, other factors held constant, an increase in the access to financing causes a 0.781 increase in the water companies financial sustainability, an increase in cost of capital with other factors held constant causes a 0.828 increase in the financial sustainability of the water companies while an increase in risk financing pattern with other factors held constant causes a 0.860 decrease in the water companies financial sustainability. This shows that as expected that increase in Organizational Performance Measures and Access to financing increases the water companies financial sustainability while increase in the Risk Financing Pattern and Cost of Capital reduces the financial sustainability of the water companies.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of the data findings on the factors influencing financial sustainability of water companies, conclusions drawn and recommendations there-to. The chapter is hence structured into summary of findings, conclusions, recommendations and areas for further research.

5.2 SUMMARY OF THE STUDY

On the sustainability initiatives, the study found out that the water companies had ensured that their working capital is enough, repaid bank loans and overdrafts within the required period to have room for further findings.

The study further found that the water company's financial sustainability conforms to the regression model:

$$Y = -9.547 + 0.781\ \beta iXi + 0.828\ \beta iiXii + 0.860\ \beta iiiXiii - 0.380\ \beta ivXiv + e$$

Which shows that MFIs sustainability are influenced positively by Organizational Performance Measures and Access to Financing increases the water companies financial sustainability and negatively by increase in the Risk Financing Pattern and Cost of Capital which reduces the financial sustainability of the water companies.

The average loan size (average gross loan portfolio divided by the number of active borrowers) is a proxy for depth of outreach and smaller loans are generally taken to indicate greater depth of outreach thus, just as the study found, average loan size is inversely associated with water companies financial sustainability. Funds from government and grants leads to subsidized funds, minimizing the interest expense incurred by the water company and makes their products attractive in the market hence, just as the study found, have a positive effect on financial

sustainability. The sustainability of a water company also depends on how much operating income it can generate and whether that income is large enough to cover all its costs hence an increase in the total income generated leads to an increase in financial sustainability. The opposite, the study found to be true with total operating expense since an increase in expense without an even greater increase in income leads to losses. On risk financing, the study found out that a higher debt to equity ratio reduces the chances of an water company to sustain itself as its debts continue to rise since high debts are associated with interest fees to be paid.

5.3 CONCLUSIONS

The study found water companies in Nigeria though faces challenges, have enjoyed sustainable Operationalization of business. Most water companies are cushioned against financial losses being trustees and NGO funded. To ensure financial sustainability water companies in Nigeria have been providing differentiated access to finances which ensures that they are able to meet their customer expectations.

The study concludes that Nigerian water companies in order to remain sustainable ensured that their working capital is enough, repaid bank loans and overdrafts within the required period to have room for borrowing more funds and offered competitive services for the customers in order to neutralize competition. The water companies also slacken the stringent requisites for amount of collateral for specific amount of loans and instead beef up the legal procedures during application of loans to minimize defaults and periodically (mostly quarterly) use financial indicators/ratios like leverage ratios, analysis of arrears rate, analyzing the delinquency of borrowing to mention just a few, to assess, monitor and evaluate the result like increase in market share, credit defaults, non-performing loans and customer loyalty. The water companies further have moved from depending on one source of finance to many sources, used of performance ratios and have adopted clear governance structures which have ensured their sustainability .

The water companies financial sustainability has been ensured by beefing up their service delivery and reducing credit risks at the same time. The water companies' sustainability are ensured since they obtain finances from both local and international donors mitigating against financial constraint that might affect availability of finances owing to macro economic elements/condition in a single country. Some of the water companies' expenditures (water companies' project activities and operational expenses) are also footed by the donors which further enhances financial sustainability.

The study finally concludes that water companies' financial sustainability are influenced positively by total operating income, net loan portfolio and funds from government and donor agencies increases the water companies' sustainability and negatively by debt equity ratio, total operating expenses and average loan size.

5.4 RECOMMENDATIONS

The study recommends that water companies should solicit for more funds from donors, increase the range of services they provide and beef-up their governance structure since financial sustainability is achieved when service and infrastructure levels and standards are delivered according to a long term plan.

The study also recommends that water companies should create accessibility of more financing through making commercial banks reduce the interest rate they charge them and also implore the government to make more loans available to them. The water companies should further adopt more flexible policies and procedures that will not make them susceptible to fraud but enable them respond well to environmental turbulence.

5.5 AREA FOR FURTHER STUDY

The study recommends that further studies be done of the factors hindering water companies sustainability in Nigeria so as to have an holistic view on Nigeria water companies sustainability.

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APPENDIX II:

ANALYSIS OF FINANCIAL STATEMENTS AND RATING BY WATER SERVICES REGULATORY BOARD

	Financial stability			
YEAR OF STATEMENTS	OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABARDARE	NYERI WATER
July 2011-June 2012	4,714,330	(1,618,503)	2,470,234	45,437,305
July 2010-June 2011	12,987,079	(3,281,247)	6,074,321	48,078,846
July 2009-June 2010	23,248,591	4,131,910	8,172,749	41,749,066
July 2008-June 2009	6,245,874	5,653,137	5,265,149	31,036,046
July 2007-June 2008	2,877,498	1,867,505	4,771,603	(8,469,977)

	Surplus/Deficits			
YEAR OF STATEMENTS	OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABARDARE	NYERI WATER
July 2011-June 2012	1,262,471	(4,517,732)	(4,363,986)	32,315,170
July 2010-June 2011	16,951,902	(9,201,537)	(268,013)	30,612,286
July 2009-June 2010	31,795,161	3,962,284	5,906,764	16,459,234
July 2008-June 2009	6,727,848	8,373,325	5,410,961	8,936,643
July 2007-June 2008	2,735,756	2,896,688	1,778,490	(25,300,137)

	Access to Financing			
YEAR OF STATEMENTS	OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABARDARE	NYERI WATER
July 2011-June 2012	22,758,442	23,935,012	6,188,191	380,705,494
July 2010-June 2011	11,605,960	19,644,314	2,810,694	390,958,352
July 2009-June 2010	11,389,784	20,062,449	1,575,832	394,895,288
July 2008-June 2009	11,235,207	20,442,774	907,276	414,238,731
July 2007-June 2008	11,235,207	17,088,348	608,178	399,821,263

	Cost of Capital			
YEAR OF STATEMENTS	OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABARDARE	NYERI WATER
July 2011-June 2012	0	807,338	28,087	25,765,221
July 2010-June 2011	0	582,432	15,144	27,056,816
July 2009-June 2010	0	347,497	22,779	28,341,390
July 2008-June 2009	0	263,251	14,600	29,451,707
July 2007-June 2008	0	135,418	8,912	315,404

	Organization Performance			
YEAR OF RATING	OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABARDARE	NYERI WATER
July 2011-June 2012	107	84	125	185
July 2010-June 2011	98	77	114	169
July 2009-June 2010	80	69	116	165
July 2008-June 2009	96	105	119	176
July 2007-June 2008	108	95	82	149

APPENDIX III:

ANALYSIS OF FINANCIAL STATEMENTS AND RATINGS BY WATER SERVICES REGULATORY BOARD

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.782943
R Square	0.613
Adjusted R Square	0.48
Standard Error	0
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	5.91E+13	1.48E+13	4.3336	0
Residual	0	0	65535		
Total	4	5.91E+13			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*
Intercept	-9.547	0.737	65535	6E-10	-5.8E+08	5.8E+08	-5.8E+08
X Variable 1	0.781	0.023	65535	0.000005	5.024702	5.024702	5.024702
X Variable 2	0.828	0.025	65535	8.9E-07	-0.96343	-0.96343	-0.96343
X Variable 3	0.86	0.059	65535	5.6E-13	23.93034	23.93034	23.93034
X Variable 4	-0.38	0.181	65535	8E-08	5785738	5785738	5785738

RESIDUAL OUTPUT

Observation	*Predicted Y*	*Residuals*
1	1855354	3.61E-08
2	5260051	1.23E-07
3	11851083	1.17E-07
4	5721387	1.28E-07
5	3172202	3.26E-09

MEASURES OF CENTRAL TENDENCY

	Mean	*Minimum*	*Maximum*	*Std. Deviation*
X Variable 1	0.34	0.22	0.47	0.10
X Variable 2	17.58	15.42	18.41	1.23
X Variable 3	8.59	6.71	9.48	1.12
X Variable 4	18.45	17.50	18.93	0.57

APPENDIX IV:

AVERAGE PERFORMANCE FOR ALL THE FOUR COMPANIES

Year of Analysis	Financial sustainability	Risk Financing	Accesss to Financing	Cost of Capital	Organization Performance
July 2011-June 2012	12,750,842	6,173,981	17,627,215	6,650,162	105.333
July 2010-June 2011	15,964,750	9,523,660	11,353,656	6,913,598	101
July 2009-June 2010	19,325,579	14,530,861	11,009,355	7,177,917	92.333
July 2008-June 2009	12,050,052	7,362,194	10,861,752	7,432,390	97.5
July 2007-June 2008	261,657	(4,472,301)	9,643,911	114,934	100.8333

APPENDIX V:
PERFORMANCE OF THE COMPANIES AS RATED BY WATER SERVICES REGULATORY BOARD FOR THE YEAR 2011-2012

KEY PERFORMANCE INDICATORS					
		OTHAYA	MATHIRA	TETU	NYERI
		MUKURWEINI	WATER	ABADARE	WATER
Water Quality (Compliance with Residual Chroline)	%	71	94	77	100
Water Quality (Compliance with Bactariological Requirements)	%	85	81	98	98
Non Revenue Water	%	55	65	54	26
Service area Water Coverage	%	72	25	88	72
Service area Santation Coverage	%	91	100	98	88
No of Hours of Supply	No	20	21	21	16
Staff Productivity (No of staff per 1,000 water connections)	No	6	7	6	5
Revenue Collection Efficiency	%	79	80	98	100
O & M Cost Recovery	%	141	157	95	163
Metering Ratio	%	67	67	76	100
Rating Score		**98**	**77**	**114**	**169**

APPENDIX VI:

PERFORMANCE OF THE COMPANIES AS RATED BY WATER SERVICES REGULATORY BOARD FOR THE YEAR 2010-2011

KEY PERFORMANCE INDICATORS					
		OTHAYA	MATHIRA	TETU	NYERI
		MUKURWEINI	WATER	ABADARE	WATER
Water Quality (Compliance with Residual Chroline)	%	98	100	100	99
Water Quality (Compliance with Bactariological Requirements)	%	78	96	100	100
Non Revenue Water	%	58	66	58	31
Service area Water Coverage	%	50	20	82	70
Service area Santation Coverage	%	66	78	100	85
No of Hours of Supply	No	20	21	21	24
Staff Productivity (No of staff per 1,000 water connections)	No	9	7	7	6
Revenue Collection Efficiency	%	70	85	95	120
O & M Cost Recovery	%	149	166	103	164
Metering Ratio	%	50	54	84	100
Rating Score		**80**	**69**	**116**	**165**

APPENDIX VII:

PERFORMANCE OF THE COMPANIES AS RATED BY WATER SERVICES REGULATORY BOARD FOR THE YEAR 2009-2010

KEY PERFORMANCE INDICATORS					
		OTHAYA	MATHIRA	TETU	NYERI
		MUKURWEINI	100	ABADARE	WATER
Water Quality (Compliance with Residual Chroline)	%	100	100	44	100
Water Quality (Compliance with Bactariological Requirements)	%	97	100	100	99
Non Revenue Water	%	65	61	63	39
Service area Water Coverage	%	61	30	68	68
Service area Santation Coverage	%	97	67	100	87
No of Hours of Supply	No	17	20	20	24
Staff Productivity (No of staff per 1,000 water connections)	No	9	7	7	6
Revenue Collection Efficiency	%	69	78	80	90
O & M Cost Recovery	%	66	90	107	143
Metering Ratio	%	41	39	78	96
Rating Score		**96**	**105**	**119**	**176**

APPENDIX VIII:

PERFORMANCE OF THE COMPANIES AS RATED BY WATER SERVICES REGULATORY BOARD FOR THE YEAR 2008-2009

KEY PERFORMANCE INDICATORS					
		OTHAYA MUKURWEINI	MATHIRA WATER	TETU ABADARE	NYERI WATER
Water Quality (Compliance with Residual Chroline)	%	83.33	100.00	40.00	100.00
Water Quality (Compliance with Bactariological requirements)	%	98.58	100.00	40.00	96.41
Non Revenue Water	%	84.91	64.76	68.50	45.30
Service area Water Coverage	%	55.34	22.96	72.00	57.50
Service area Santation Coverage	%	74.20	82.65		36.00
No of Hours of Supply	No	24.00	18.00	16.00	24.00
Staff Productivity (No of staff per 1,000 water connections)	No	6.91	11.98	7.03	8.27
Revenue Collection Efficiency	%	81.58	101.17	77.26	96.80
O & M Cost Recovery	%	106.00	81.00	117.80	132.53
Metering Ratio	%	9.15	39.66	47.00	100.00
Rating Score		**108**	**95**	**82**	**149**